National Institute of Environmental Health Sciences

High temperature and hospitalizations for cardiovascular and respiratory causes in 12 European cities

Author(s): Michelozzi P, Accetta G, De Sario M, D'Ippoliti D, Marino C, Baccini M, Biggeri A, anderson HR, Katsouyanni K, Ballester F, Bisanti L, Cadum E, Forsberg B, Forastiere F, Goodman PG, Hojs A, Kirchmayer U, Medina S, Paldy A, Schindler C, Sunyer J, Perucci CA, Group PC

Year: 2009

Journal: American Journal of Respiratory and Critical Care Medicine. 179 (5): 383-389

Abstract:

RATIONALE: Episode analyses of heat waves have documented a comparatively higher impact on mortality than on morbidity (hospital admissions) in European cities. The evidence from daily time series studies is scarce and inconsistent. OBJECTIVES: To evaluate the impact of high environmental temperatures on hospital admissions during April to September in 12 European cities participating in the Assessment and Prevention of Acute Health Effects of Weather Conditions in Europe (PHEWE) project. METHODS: For each city, time series analysis was used to model the relationship between maximum apparent temperature (lag 0-3 days) and daily hospital admissions for cardiovascular, cerebrovascular, and respiratory causes by age (all ages, 65-74 age group, and 75+ age group), and the city-specific estimates were pooled for two geographical groupings of cities. MEASUREMENTS and MAIN RESULTS: For respiratory admissions, there was a positive association that was heterogeneous between cities. For a 1 degrees C increase in maximum apparent temperature above a threshold, respiratory admissions increased by +4.5% (95% confidence interval, 1.9-7.3) and +3.1% (95% confidence interval, 0.8-5.5) in the 75+ age group in Mediterranean and North-Continental cities, respectively. In contrast, the association between temperature and cardiovascular and cerebrovascular admissions tended to be negative and did not reach statistical significance. CONCLUSIONS: High temperatures have a specific impact on respiratory admissions, particularly in the elderly population, but the underlying mechanisms are poorly understood. Why high temperature increases cardiovascular mortality but not cardiovascular admissions is also unclear. The impact of extreme heat events on respiratory admissions is expected to increase in European cities as a result of global warming and progressive population aging.

Source: http://dx.doi.org/10.1164/rccm.200802-217OC

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Temperature

Air Pollution: Interaction with Temperature, Ozone, Other Air Pollution

Air Pollution (other): NO2, SO2

Temperature: Extreme Heat

Geographic Feature: ☑

resource focuses on specific type of geography

Ocean/Coastal, Urban

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : Spain; Hungary; Ireland; Slovenia; United Kingdom; Italy; France; Sweden; Switzerland

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Cardiovascular Effect, Respiratory Effect

Cardiovascular Effect: Other Cardiovascular Effect

Cardiovascular Disease (other): cardiovascular hospital admissions; cerebrovascular hospital admissions

Respiratory Effect: Other Respiratory Effect

Respiratory Condition (other) : respiratory hospital admissions

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Elderly

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified